COURSE DESCRIPTION CARD - SYLLABUS

Course name
Statistics [S1Lot2>STAT]

Course

Field of study
Aviation

Year/Semester
1/1

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
15

Laboratory classes
0

Other
0

Tutorials
15

Projects/seminars
0

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

The student has basic knowledge of combinatorics and theory of probability resulting from the school program. The student has basic knowledge of mathematical analysis (differential calculus of functions of one variable, integral calculus of functions of one variable and basics of matrix algebra). He can think logically. The student is aware of the learning purpose. The student is able to apply the language of mathematics (differential and integral calculus) to describe simple problems in technology. Is able to obtain information from literature.

Course objective

The aim of the course is to familiarize students with the basic issues of statistics in order to solve simple practical problems.

Course-related learning outcomes

Knowledge:
The student knows the basic probability distributions. The student knows the basic concepts of mathematical statistics. The student knows various methods of statistical inference. Has an ordered, theoretically founded knowledge of mathematics used to analyze the results

Skills:
the student can use theoretical probability distributions. The student is able to analyze and interpret statistical data. The student is able to use the methods and tools of mathematical statistics in engineering practice

Social competences:
is aware of the social role of a technical university graduate, in particular understands the need to formulate
and provide the society, in an appropriate form, with information and opinions on engineering activities, technological achievements, as well as the achievements and traditions of the engineer profession

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Assessment of knowledge and skills acquired during the lecture is verified on the basis of a written test.
Tutorials: The assessment of knowledge and skills acquired in tutorials is verified on the basis of written tests.

Programme content

1. Definition of probability,
2. Discrete random variable.
3. Continuous random variable.
4. Elements of descriptive statistics.
5. Two-dimensional data from the sample.
6. Estimation.
7. Tests of significance for one population.

Course topics

LECTURE
1. Axiomatic definition of probability,
2. Classical probability. Total probability.
3. Conditional probability.
4. Discrete random variable.
5. Continuous random variable.
6. Elements of descriptive statistics.
7. Covariance of sample and sample linear correlation coefficient. Estimating a simple regression.
8. Estimation.
9. Tests of significance for one population.

Tutorials:
1. Conditional probability. Total probability.
2. Discrete random variable.
3. Continuous random variable.
4. Elements of descriptive statistics.
5. Estimation
6. Tests of significance for one population,
7. Optional: Correlation. Estimating a simple regression.

Teaching methods

Interactive lecture with the formulation of current questions for a group of students. Students actively participate in the lecture. Each presentation of a new topic is preceded by a reminder of the content related
to the discussed issue (e.g. content known to students from other subjects).The main content of each lecture is posted on eCourses.
Tutorials: Students are given problems to be solved during tutorials. The needed theory, formulas and graphs are made available to students. The tasks are solved together with the teacher with the active participation of students.

Bibliography

Basic:
1. D. Bobrowski, (1986) Probabilistyka w zastosowaniach technicznych, Wydawnictwo Naukowo Techniczne.
2. D. Bobrowski, K. Maćkowiak-Łybacka, (2006) Wybrane metody wnioskowania statystycznego, Wydawnictwo Politechniki Poznańskiej.
3. J. Koronacki, J. Melniczuk (2001) Statystyka dla studentów kierunków technicznych i przyrodniczych. WNT, Warszawa.

Additional:
1. Plucińska A., Pluciński E., Probabilistyka, Wydawnictwo PWN, WNT, Warszawa 2006

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	30	1,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	20	0,50